Invasive Plants in New Hampshire

Presented by:
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Definitions of Invasive Plants

- A naturalized, non-native plant taxon (species, subspecies, variety, form or cultivar) that invades native plant communities and proliferates, outcompetes native species and/or disrupts ecological processes by threatening imperiled species and decreasing biological diversity.

Characteristics of Invasive Plants

- Non native to the area or ecosystem
- Highly adaptive to new environments
- Fast growing
- Ability to move across spatial gaps away from site of introduction usually by seed or other propagules
- Early and rapid development
- Ability to produce many seeds or offspring and,
- Displaces native vegetation, causes economic harm or is considered to be a health hazard

Invasive Species Act

- House Bill 1258-FN established the following:
  - Invasive Species Act on April 27, 2000;
  - Statutory Law (RSA 430:51 through 430:57);
  - Invasive Species Committee;
    - Evaluate Plants, Insects and fungi;
    - New Hampshire Prohibited Invasive Species List;
    - New Hampshire Restricted Invasive Species List;
    - Rules;
    - Education;
    - Alternatives; and
    - Management strategies.

Invasive Plant Criteria

1. Is the taxon non native to New England?
2. Is the taxon naturalized in New England?
3. Does the taxon have the biologic potential for widespread dispersion and rapid establishment in USDA Plant Hardiness Zones 3-6?
4. Does the taxon have the biologic potential for dispersing over spatial gaps away from site of introduction in USDA Plant Hardiness Zones 3-6?
5. Does the taxon negatively affect native species, natural communities, commercial agriculture, forest crop production, or human health in USDA Plant Hardiness Zones 3-6?

Prohibited Invasive Species List

- Includes invasive species that were deemed to present an immediate danger to:
  - The health of native species;
  - To the environment;
  - To commercial agricultural or forest crop production; or
  - To human health.

Prohibited Invasive Plants

- *Ailanthus altissima* **tree of heaven**
- *Alliaria petiolata* **garlic mustard**
- *Berberis vulgaris* **European barberry**
- *Celastrus orbiculatus* **Oriental bittersweet**
- *Cynanchum nigrum* **black swallow-wort**
- *Cynanchum rossicum* **pale swallow-wort**
- *Elaeagnus umbellata* **autumn olive**
- *Heracleum mantegazzianum* **giant hogweed**
- *Iris pseudacorus* **water-flag**
- *Ligustrum obtusifolium* **blunt-leaved privet**

Prohibited Invasive Plants

- *Lonicera bella* **showy bush honeysuckle**
- *Lonicera japonica* **Japanese honeysuckle**
- *Lonicera morrowii* **Morrow's honeysuckle**
- *Lonicera tatarica* **Tatarian honeysuckle**
- *Polygonum cuspidatum* **Japanese knotweed**
- *Rhamnus cathartica* **common buckthorn**
- *Rhamnus frangula* **glossy buckthorn**
- *Rosa multiflora* **multiflora rose**

Prohibited Invasive Insects

- *Acarapis woodi* **honeybee tracheal mite**
- *Adelges tsugae* **hemlock woolly adelgid**
- *Aeolesthes sarta* **city longhorn beetle**
- *Anoplophora glabripennis* **Asian longhorned beetle**
- *Callidiellum rufipenne* **cedar longhorned beetle**
- *Dendrolimus sibiricus* **Siberian silk moth**
- *Hylurgus lingniperda* **redhaired bark beetle**
- *Ips typographus* **Euro. spruce bark beetle**

Prohibited Invasive Insects

- *Lymantria dispar* **Asian gypsy moth**
- *Popillia japonica* **Japanese beetle**
- *Pyrrhalta viburni* **viburnum leaf beetle**
- *Rhizotrogus majalis* **European chafer**
- *Symantria monacha* **nun moth**
- *Tetropium fuscum* **brown spruce longhorned beetle**
- *Varroa destructor* **varroa mite**

Proposed Rules for Prohibited Species

- No person shall knowingly collect, transport, sell, distribute, propagate or transplant any living and viable portion of any plant or insect species, which includes all of their cultivars and varieties, of any prohibited invasive species.
- Beginning January 1, 2007, the following plant species shall be added to the New Hampshire prohibited invasive species list:
  - *Acer platanoides*, Norway maple;
  - *Berberis thunbergii*, Japanese barberry; and
  - *Euonymus alatus*, burning bush.

Exemptions to the Proposed Rules

- Persons who have been granted an approved written variance from the department shall be exempt from the rules for one or more of the following activities:
  - Collection;
  - Transportation;
  - Cultivation;
  - Transplantation; or
  - Propagation.

Exemptions to the Proposed Rules

- Persons who utilize only nonliving and nonviable prohibited invasive species shall be exempt from the restrictions on collection, transportation, sale and distribution for the following purposes:
  - Outreach;
  - Arts and crafts;
  - Lumber;
  - Firewood; or
  - Processed products.

Exemptions to the Proposed Rules

- Persons shall be exempt from collecting and transporting living and viable prohibited invasive species for purposes of:
  - Maintaining a publicly-accessible herbarium, mycology or entomology collection;
  - Disposal;
  - Identification; or
  - Interstate transport.

Variance Request

- Any person may apply for a written variance to allow for temporary scientific use of prohibited invasive species for the collection, transportation, cultivation, transplantation or propagation of prohibited invasive species provided the species shall not be:
  - Sold;
  - Distributed; or
  - Allowed to escape.

Variance Request Continued

- The approved variance for the use of the invasive species shall not result in any of the following:
  - Environmental impacts;
  - Economic damage; or
  - Cause harm to human health.

Disposal of Prohibited Invasive Species

- Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable, such as, but not limited to:
  - Burning / incineration;
  - Burying; or
  - Chemically treating;

Restricted Invasive Species List

- These are species deemed to present a potential for environmental or economic harm, but do not pose an immediate danger. There are currently no proposed rules associated with these species. However, if they are later determined to be problematic they will be re-evaluated and their status changed as needed.

Restricted Invasive Plants

- *Ampelopsis brevipedunculata* **porcelain-berry**
- *Centaurea maculosa* **spotted knapweed**
- *Cirsium arvense* **Canada thistle**
- *Coronilla varia* **crown vetch**
- *Elaeagnus angustifolia* **Russian olive**
- *Euonymus fortunei* **wintercreeper**
- *Glyceria maxima* **sweet reedgrass**
- *Ligustrum vulgare* **common privet**
- *Lonicera maakii* **amur honeysuckle**

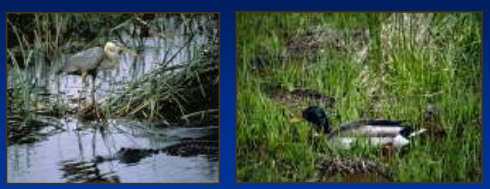
Restricted Invasive Plants Continued

- *Lysimachia nummularia* **moneywort**
- *Microstegium vimineum* **Japanese stilt grass**
- *Phalaris arundinacea* **reed canary grass**
- *Populus alba* **white poplar**
- *Pueraria lobata* **kudzu**
- *Robinia pseudoacacia L.* **black locust**
- *Ulmus pumila* **Siberian elm**

Invasive Species Impacts

Loss of Wildlife Habitat

Loss of Waterfowl Habitat



Loss of Species Diversity

Purple Loosestrife
Lythrum salicaria

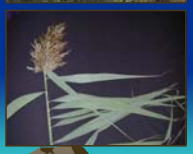
- Introduced in the 1800's;
- Native to Europe and Asia;
- Grow from 3 to 7 feet tall;
- Used as an ornamental and by beekeepers;
- Flowers early June thru September;
- Can Yield 2.5 million seeds per plant.

From NEWFS

Arrival of Purple loosestrife

Common Reed
Phragmites australis

- Native to Europe;
- Spreads by rhizomes;
- Commonly invades wetlands;
- Outcompetes native species.



USGS Aerial Photo
Phragmites Invasion

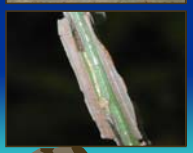
Rye North Beach, New Hampshire, United States 29 Apr 1998

Autumn Olive
Elaeagnus umbellata

- Native to Europe;
- Silvery gray foliage;
- Produces many fruits;
- Seeds spread by birds;
- Aggressive growth habit;
- Outcompetes native species.

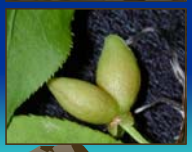
Burning Bush
Euonymus alatus

- Introduced in 1860's;
- Native to Europe;
- Vibrant fall red color;
- Seeds spread by birds and small mammals;
- Colonizes natural areas;
- Outcompetes native species.



Burning Bush
Euonymus alatus



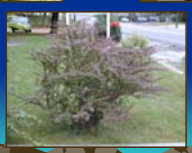


Japanese Barberry
Berberis thunbergii


- Introduced in 1875;
- Used ornamentally and for barriers;
- Reproduces by creeping roots and seed dispersal;
- Invades fields, woodlands, and roadsides.

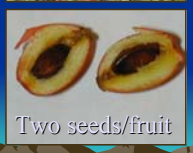
Japanese Barberry
Berberis thunbergii

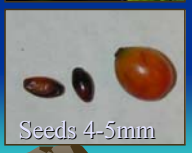




Japanese Barberry
Berberis thunbergii

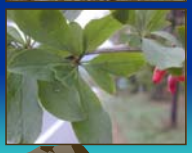



Two seeds/fruit


Seeds 4-5mm

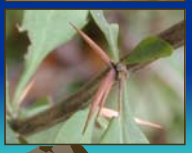
European Barberry
Berberis vulgaris

- Introduced in 1800s;
- 100's of seeds per plant, spread by animals, water, and humans;
- Invades disturbed areas and open woods;
- Displaces native species.

European Barberry
Berberis vulgaris

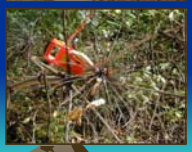
- Elongated pale pink to reddish fruits;
- Thorns in threes at leaf nodes.

Giant Hogweed
Heracleum mantegazzianum

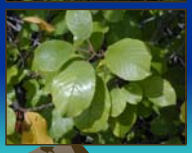
- Native to Europe;
- 15 to 20 feet tall ;
- Dark reddish-purple stem and spotted leaf stalks;
- Phototoxic sap.

Giant Hogweed
Heracleum mantegazzianum

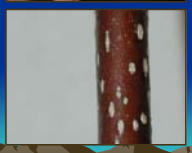


Glossy Buckthorn
Rhamnus frangula

- Introduced 1890's;
- Able to produce 1560 seedlings per year;
- Forms dense monocultures;
- Shades out native species.

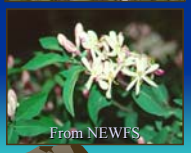


Glossy Buckthorn
Rhamnus frangula



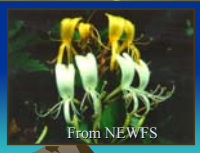
Tartarian Honeysuckle
Lonicera tatarica

- Introduced 1752;
- Fruit dispersed by birds;
- Spreads rapidly;
- Outcompetes native species.



Japanese Honeysuckle
Lonicera japonica

- Introduced 1806;
- Seeds dispersed by wildlife;
- Invades woodlands and old fields;
- Outcompetes native species.

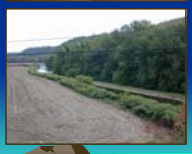


Morrow Honeysuckle
Lonicera morrowii

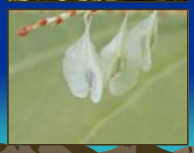
- Introduced 1975;
- Dispersed by birds;
- Out competes native species;
- Creates monocultures;
- Depletes soil nutrients.

Japanese Knotweed
Polygonum cuspidatum

- Introduced from Japan in the late 1800's;
- Spreads rapidly;
- Propagules dispersed by mammals, birds, water;
- Outcompetes native species.

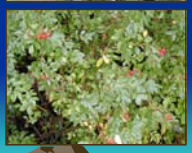


Japanese Knotweed
Polygonum cuspidatum

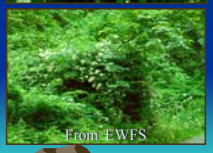


Multiflora Rose
Rosa multiflora

- Introduced from Japan in 1886 as rootstock for cultivated roses;
- Reproduces by seed;
- Seeds dispersed by mammals and birds;
- Outcompetes native species.

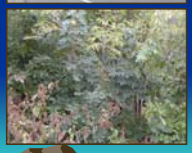


Multiflora Rose
Rosa multiflora



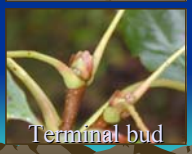
Norway Maple
Acer platanoides

- Introduced early 1800s;
- Reproduces by seed;
- Seeds dispersed by wind, mammals and birds;
- Outcompetes native species.



Norway Maple
Acer Platanoides


Leaf


Terminal bud

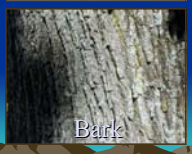
Sugar Maple
Acer Saccharum


Leaf


Terminal bud

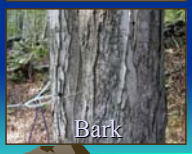
Norway Maple
Acer Platanoides


Samara


Bark

Sugar Maple
Acer Saccharum

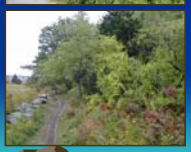

Samara


Bark

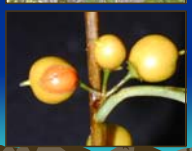
Norway maple 'Crimson king'
Acer platanoides

Oriental Bittersweet
Celastrus orbiculatus

- Introduced 1879;
- Reproduces by seed & root suckering;
- Tolerates many types of soil conditions;
- Outcompetes native species;
- Used in ornamental wreaths.



Oriental Bittersweet
Celastrus orbiculatus

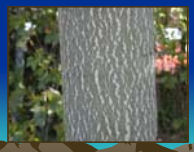


Tree of Heaven
Ailanthus altissima

- Introduced in early 1800's;
- Native to China;
- Thrives in disturbed and neglected sites;
- Reproduces by seed.

Tree of Heaven
Ailanthus altissima



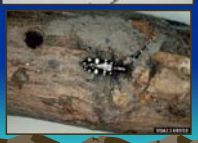



Water-flag Iris
Iris Pseudoacorus

- Established in swamps; marshes, ponds and streams;
- Spreads by underground rhizomes.

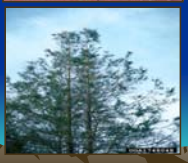
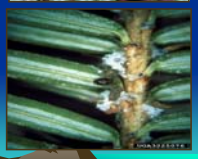

Asian Longhorn Beetle
Anoplophora glabripennis





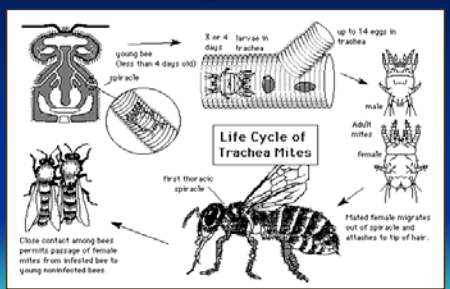

Hemlock Woolly Adelgid
Adelges tsugae



Elongated Hemlock Scale
Fiorinia externa


Honeybee Tracheal Mites
Acarapis woodi



Control/Management Strategies

- Mechanical
  - Mow, cut and/or hand or machine pull plants to manage small to medium infestations
- Cultural
  - Manipulate the landscape by planting native vegetation to shade out and/or outcompete invasives
- Biological
  - Utilize approved biological control agents such as insects, bacterias, etc.
- Chemical
  - Contact the Department of Agriculture Markets & Food Division of Pesticides (271-3550) or a licensed pesticide applicator who could utilize approved pesticides to manage medium to large populations

Mechanical Control

Weed Wrench

Flails Mower

Cultural Control

Biological Control of Purple Loosestrife

Galerucella calmariensis

Galerucella calmariensis Larva

Hylobius transversovittatus

Nanophyes sp.

Biological Control of Hemlock Woolly Adelgid

Woolly Adelgid

Pseudoscymnus tsugae

Pseudoscymnus tsugae

Chemical Control